Physics 201, Fall 2018
Problem Set #6 (due Friday, Oct. 19)

Each problem is 10 points.

Problems from Serway, Moses and Moyer:

6.2, 6.3, 6.5, 6.6, 6.9, 6.10, 6.11, 6.17

Additional problem:
A1: The wave function of a quantum particle trapped in a box of size *L* is described by the following wave function:

$$\psi(x) = \sqrt{\frac{1}{L}}\sin\frac{\pi x}{L} - \sqrt{\frac{1}{2L}}\sin\frac{3\pi x}{L} + \sqrt{\frac{1}{2L}}\sin\frac{5\pi x}{L}$$

If the energy of the particle is measured, what three possible values will be obtained?

A2: Let's suppose that at *t=0* the particle was in the quantum state described by:

$$\psi(x) = \sqrt{\frac{6}{5L}}\left(\sin\frac{\pi x}{L}\right) - \sqrt{\frac{8}{5L}}\left(\sin\frac{3\pi x}{L}\right)$$

Calculate the probablity density for this particle $P(x,t) = |\psi(x,t)|^2$.